

What is claimed is:

1. A pipe connecting unit for connecting a first pipe to a second pipe, the pipe connecting unit comprising:

a bellows body made of elastomer material and having first and second ends;

5 said bellows body having projecting flange collars at said first and second ends, respectively;

first and second annular holding flanges mounted behind corresponding ones of said flange collars and each of said holding flanges being configured to engage and grasp the flange collar corresponding thereto;

10 first and second pipe mounted flanges mounted on corresponding ones of said first and second pipes;

said first and second pipe mounted flanges being slip-on flanges joined to said first and second pipes at corresponding end portions thereof;

15 said flange collars defining respective end sealing surfaces facing toward said slip-on flanges;

each of said end sealing surfaces being partitioned in radial direction into at least inner and outer concentric annular sealing surfaces by a peripherally extending slot formed in the end sealing surface; and,

20 only the outer annular sealing surface being in sealing contact engagement with the slip-on flange corresponding thereto when the holding flange is drawn toward and secured to the corresponding slip-on flange.

25 2. The pipe connecting unit of claim 1, further comprising first and second annular sealing discs connected to corresponding ones

of said inner and outer annular sealing surfaces at each end of
said bellows body; and, said sealing discs all being made of
5 elastomeric or thermoplastic material.

3. The pipe connecting unit of claim 1, further comprising a
stabilization ring implanted in said slot at each end of said
bellows body.

4. The pipe connecting unit of claim 3, wherein said
stabilization ring is stable as to form and is made of a material
of one of the following materials: metal, elastomer or
thermoplast.

5. The pipe connecting unit of claim 1, wherein each of said
flange collars has a reinforcement layer formed therein.

6. A pipe connecting unit for connecting a first pipe to a
second pipe, the pipe connecting unit comprising:

a bellows body made of elastomer material and having first
and second ends;

5 said bellows body having projecting flange collars at said
first and second ends, respectively;

first and second annular holding flanges mounted behind
corresponding ones of said flange collars and each of said
holding flanges being configured to engage and grasp the flange
10 collar corresponding thereto;

first and second pipe mounted flanges provided on
corresponding ones of said first and second pipes;

said first and second pipe mounted flanges being
welding-neck flanges at corresponding end portions of said first

15 and second pipes;

said flange collars defining respective end sealing surfaces facing toward said welding-neck flanges;

each of said end sealing surfaces being partitioned in radial direction into at least inner and outer concentric annular sealing surfaces by a peripherally extending slot formed in the
20 end sealing surface; and,

at least the outer annular sealing surface being in sealing contact engagement with the welding-neck flange corresponding thereto when the holding flange is drawn toward and secured to
25 the corresponding welding-neck flange.

7. The pipe connecting unit of claim 6, further comprising first and second annular sealing discs connected to corresponding ones of said inner and outer annular sealing surfaces at each end of said bellows body; and, said sealing discs all being made of
5 elastomeric or thermoplastic material.

8. The pipe connecting unit of claim 6, further comprising a stabilization ring implanted in said slot at each end of said bellows body.

9. The pipe connecting unit of claim 8, wherein said stabilization ring is stable as to form and is made of a material of one of the following materials: metal, elastomer or thermoplast.

10. The pipe connecting unit of claim 6, wherein each of said flange collars has a reinforcement layer formed therein.

11. The pipe connecting unit of claim 6, wherein both of said annular sealing surfaces are in sealing contact engagement with the welding-neck flange.